# TROUBLESHOOTING GUIDE

**CAUTION**

1. Check grounding before checking for trouble.
2. Be careful of the high voltage circuit.
3. Discharge high voltage capacitor.
4. When checking the continuity of the switches or the high voltage transformer, disconnect one lead wire from these parts and then check continuity with the AC plug removed. To do otherwise may result in a false reading or damage to your meter.
   When disconnecting a plastic connector from a terminal, you must hold the plastic connector instead of the lead wire and then disconnect it, otherwise lead wire may be open or the connector cannot be removed.
5. Do not touch any parts of the circuitry on the digital programmer circuit, since static electric discharge may damage this control panel.
   Always touch yourself to ground while working on this panel to discharge any static charge in your body.
6. 120V AC is present at the shaded area ▭ of the digital programmer circuit (Terminals of power relay's and primary circuit of low voltage transformer). When troubleshooting, be cautious of possible electrical shock hazard.

First of all operate the microwave oven following the correct operating procedures in order to find the exact cause of any trouble.

| | SYMPTOM | CAUSE | CORRECTIONS |
|---|---|---|---|
| 1. | Oven is dead.<br>Fuse is OK.<br>No display and no operation at all. | 1. Open or loose lead wire harness.<br>2. Open thermal cutout (Magnetron)<br>3. Open low voltage transformer<br>4. Defective DPC | Check fan motor when thermal cutout is defective. |
| 2. | No display and no operation at all.<br>Fuse is blown. | 1. Shorted lead wire harness<br>2. Defective primary latch switch (NOTE 1)<br>3. Defective short switch (NOTE 1)<br>4. Shorted H.V. Capacitor<br>5. Shorted H.V. Transformer (NOTE 2) | Check adjustment of primary, secondary latch switch and short switch including door. |
| | | NOTE 1: All of these switches must be replaced at the same time. (Refer to adjustment instructions.) Check continuity of power relay B's contacts (between 1 and 2) and if it has continuity, replace power relay B also.<br>NOTE 2: When H.V. Transformer is replaced, check diode and magnetron also. | |
| 3. | Oven does not accept key input (Program). | 1. Key input is not in sequence<br>2. Open or loose connection of membrane key pad to DPC (Flat cable)<br>3. Shorted or open membrane key board<br>4. Defective DPC | Refer to operation procedure.<br><br>Refer to DPC troubleshooting. |
| 4. | Oven lamp and fan motor turn on when oven is plugged in with door closed. | 1. Misadjustment or loose wiring of secondary latch switch<br>2. Defective secondary latch switch | Adjust door and latch switches. |
| 5. | Timer starts countdown but no microwave oscillation.<br>(No heat while oven lamp and fan motor turn on) | 1. Off-alignment of latch switches<br>2. Open or loose connection of high voltage circuit especially magnetron filament circuit<br>NOTE: Large contact resistance will bring lower magnetron filament voltage and cause magnetron to lower output and/or have intermittent oscillation<br>3. Defective high voltage component<br>H.V. Transformer<br>H.V. Capacitor<br>H.V. Diode<br>Magnetron<br>4. Open or loose wiring of power relay B<br>5. Defective primary latch switch<br>6. Defective power relay B or DPC | Adjust door and latch switches.<br><br>Check high voltage component according to component test procedure and replace if it is defective.<br><br>Refer to DPC troubleshooting |

| | SYMPTOM | CAUSE | CORRECTIONS |
|---|---|---|---|
| 6. | Oven can program but timer does not start countdown. | 1. Open or loose wiring of secondary latch switch<br>2. Off-alignment of secondary latch switch<br>3. Defective secondary latch switch | Adjust door and latch switches. |
| 7. | Microwave output is low.<br>Oven takes longer time to cook food. | 1. Decrease in power source voltage<br>2. Open or loose wiring of magnetron filament circuit. (Intermittent oscillation)<br>3. Aging change of magnetron | Consult electrician |
| 8. | Fan motor and oven lamp turn on when door is opened. | 1. Shorted primary latch switch | Need. |
| 9. | Oven does not operate and return to plugged in mode. | 1. Open or loose wiring of temp sensor<br>2. Defective temp sensor<br>3. Defective DPC | Check tighten screws on escutcheon base bracket, D.P.C. board and temp sensor. |
| 10. | Loud buzzing noise can be heard. | 1. Loose fan and fan motor<br>2. Loose screws on H.V. Transformer<br>3. Shorted H.V. Diode | |
| 11. | Turntable motor does not rotate. | 1. Open or loose wiring of turntable motor<br>2. Defective turntable motor | |
| 12. | Oven stops operation during cooking. | 1. Open or loose wiring of primary and secondary latch switch<br>2. Operation of thermal cutout (Magnetron) | Adjust door and latch switches. |

## Trouble related to Digital Programmer Circuit

| SYMPTOM | STEP | CHECK | RESULT | CAUSE/CORRECTIONS |
|---|---|---|---|---|
| No display when oven is first plugged in.<br><br>Oven is dead. | 1 | Fuse pattern of DPC | Normal | STEP 2 |
| | | | Open (NOTE) | Shorted Circuit of ZNR, L.V.T., Oven Lamp etc. Replace DPC |
| | 2 | Low voltage transformer (LVT) secondary voltage | Abnormal 0V | LVT |
| | | | Normal | → Step 3 |
| | 3 | IC-1 pin 22 voltage (Emitter of Q1) | Abnormal | ZD1, Q1 |
| | | | Normal = 5V | → Step 4 |
| | 4 | IC-1 pin 27 voltage (14 pin of IC-2) | Abnormal | IC-2 |
| | | | Normal | → IC-1, CX1 |

NOTE

Procedure of fuse pattern repairing is as follows:

1. When the fuse pattern (PF2) opens.

(1) Remove the jumper wire (PF1).

(2) Insert the removed jumper wire (PF1) to "(PF2)" position and solder it. If both "PF1" and "PF2" fuse patterns are open, please replace DPC.

2. When the fuse pattern (PF4) opens.

(1) Remove the jumper wire (PF3).

(2) Insert the removed jumper wire (PF3) to "(PF4)" position and solder it. If both "PF1" and "PF2" fuse patterns are open, please replace DPC.

NOTE:* At the time of these repairs, make visual inspection of the varistor for burning damage and examine the transformer with tester for the presence of layer short-circuit (check primary coil resistance).

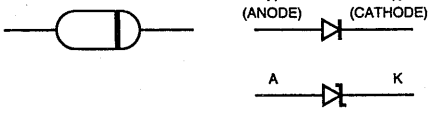
If any abnormal condition is detected, replace the defective parts.

## Trouble related to Digital Programmer Circuit

| SYMPTOM | STEP | CHECK | RESULT | CAUSE/CORRECTIONS |
|---|---|---|---|---|
| No key input | 1 | Membrane switch continuity | Abnormal | Membrane switch |
| | | | Normal | IC-1 |
| No beep sound | 1 | IC-1 pin 11 voltage | Abnormal | IC-1 |
| | | | Normal | BZ, Q2 |
| Power relay A(RY-2) does not turn on even though the program has been set and the start pad is tapped | 1 | IC-1 pin 10 voltage while operation | Abnormal | IC-1, |
| | | | Normal = 5V | → Step 2 |
| | 2 | short circuit between pin 1 and pin 12 of IC-2 | Still not turn on | RY-2 |
| | | | RY-2 turns on | IC-2 |
| No microwave oscillation at any power setting | 1 | IC-1 pin 8 and pin 9 voltages while operation at high power | Abnormal | IC-1 |
| | | | Normal 8---5V, 9---5V | → Step 2 |
| | 2 | Q8 translator | Abnormal | Q8 |
| | | | Normal | IC-2, RY-1 |
| Oven function is OK but no display all digits. | 1 | IC-3 pin 9 voltage | Abnormal | C11, D11-D14, LVT |
| | | | Normal = 9-10V | → Step 2 |
| | 2 | Replace display and check operation | Normal | Display |
| | | | Still no display | IC-1, IC-3 |

# HOW TO CHECK THE SEMICONDUCTORS USING AN OHM METER

**Diode**



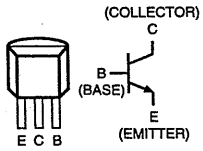

| | FORWARD | REVERSE |
|---|---|---|
| A-K | SMALL | ∞ |

**Transistor**

**NPN Transistor**

**2SC·····**

**2SD·····**

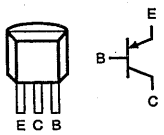



| | FORWARD | REVERSE |
|---|---|---|
| B-E | SMALL | ∞ |
| B-C | SMALL | ∞ |
| C-E | ∞ | ∞ |

**PNP Transistor**

**2SA·····**

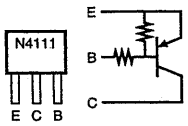
**2SB·····**




| | FORWARD | REVERSE |
|---|---|---|
| E-B | SMALL | ∞ |
| C-B | SMALL | ∞ |
| C-E | ∞ | ∞ |

**Digital Transistor**

**PNP Transistor**




| | FORWARD | REVERSE |
|---|---|---|
| E-B | 10kΩ~30kΩ | 10kΩ~30kΩ |
| C-B | 50kΩ~90kΩ | ∞ |
| C-E | 40kΩ~80kΩ | ∞ |